

What is claimed is:

1. A power supply circuit for powering an electrical device using power from a telephone line, said circuit comprising:
- 5 a gyrator having an input coupled to the telephone line and an output;
- an inductor having an input and an output;
- an oscillator having an output;
- a pulse circuit coupled to said oscillator and coupled between the output of said gyrator and the input of said inductor; and
- 10 a converter coupled between the output of said inductor and the electrical device, said converter producing line power at an output.
2. The circuit of claim 1, further comprising:
- a combiner having a input coupled to a host power supply and an output coupled to the output of said converter, said combiner supplementing said line power with host power
- 15 from said host power supply when the voltage level of said line power falls below a predetermined level.
3. The circuit of claim 2, wherein said combiner comprises a diode, said diode having an anode coupled to said host power supply and a cathode coupled to the output of said
- 20 converter.
4. The circuit of claim 3, wherein said diode is Schottky diode.

5. The circuit of claim 1, further comprising:

a polarity guard coupled between the telephone line and said gyrator.

6. The circuit of claim 1, further comprising:

5 a startup circuit coupled to said pulse circuit, said startup circuit controlling said pulse
circuit at startup.

7. The circuit of claim 1, further comprising:

a shunt regulator coupled to the output of said converter.

10 8. The circuit of claim 1, wherein said pulse circuit comprises a switch coupled
between said gyrator and said inductor.

9. The circuit of claim 1, wherein said converter comprises:

15 a divider circuit having an input coupled to said oscillator and outputs;
a transformer having a primary coil and a secondary coil with a center tap coupled to
the output of the inductor;
a dual switch coupled between the outputs of said divider circuit and said transformer;
a clamping circuit coupled to said dual switch; and
20 a rectifier having inputs coupled to said primary coil of said transformer and an
output producing said line power.

10. The circuit of claim 1, wherein said converter comprises:

a rectifier having inputs coupled said inductor and an output producing said line power.

11. The circuit of claim 1, wherein the electrical device is a telephone modem.

12. The circuit of claim 1, wherein the electrical device is a rechargeable battery.

13. The circuit of claim 1, wherein said oscillator is configured to oscillate at about 500kHz and produce about 250ns pulses and said pulse circuit pulses said inductor with current for about 250ns every $2\mu s$.

14. A power supply element for use with a power supply circuit and a host power supply, said element comprising:

a combiner coupled between the power supply circuit and the host power supply, said combiner supplementing line power from the power supply circuit with host power from the host power supply when the voltage level of the line power from the power supply circuit falls below a predetermined level.

15. The element of claim 14, wherein said combiner passes only line power from the power supply circuit to an electrical device when the voltage level of the line power from the power supply circuit is at or above a predetermined level.

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Docket No. Barrese 1-1-1-2
Express Mail Label No. EL598705955US

16. The element of claim 14, wherein said combiner comprises a diode, said diode having an anode coupled to the host power supply and a cathode coupled to the power supply circuit.

5 17. The element of claim 16, wherein said diode is a Schottky diode.

18. A telephone line powered modem for coupling to a telephone line, said telephone line powered modem for use with a host power supply supplying host power, said modem comprising:

10 a power supply circuit for supplying line power used to power the telephone line powered modem from power drawn from the telephone line; and

a combiner coupled between said power supply circuit and the host power supply, said combiner supplementing said line power with the host power when the voltage level of said line power falls below a predetermined level.

15 19. The modem of claim 18, wherein said combiner comprises a diode, said diode having an anode coupled to the host power supply and a cathode coupled to said power supply circuit.

20 20. The modem of claim 19, wherein said diode is a Schottky diode.

21. A method for powering an electrical device within a host device coupled to a telephone line, said host device having a host power supply, said method comprising the steps of:

supplying line power from power drawn from the telephone line;

receiving host power from the host power supply;

supplying said line power to the electrical device; and

supplementing said line power supplied to the electrical device with said host power when the voltage level of said line power falls below a predetermined level.

22. The method of claim 21, wherein when the voltage level of said line power is at or above said predetermined level, only said line power is passed to the electrical device.